PHOTOGRAPHIC INTERPRETATION REPORT

THE CHANG-HSIN-TIEN MISSILE DEVELOPMENT CENTER NEAR PEIPING, CHINA

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AUGUST 1965

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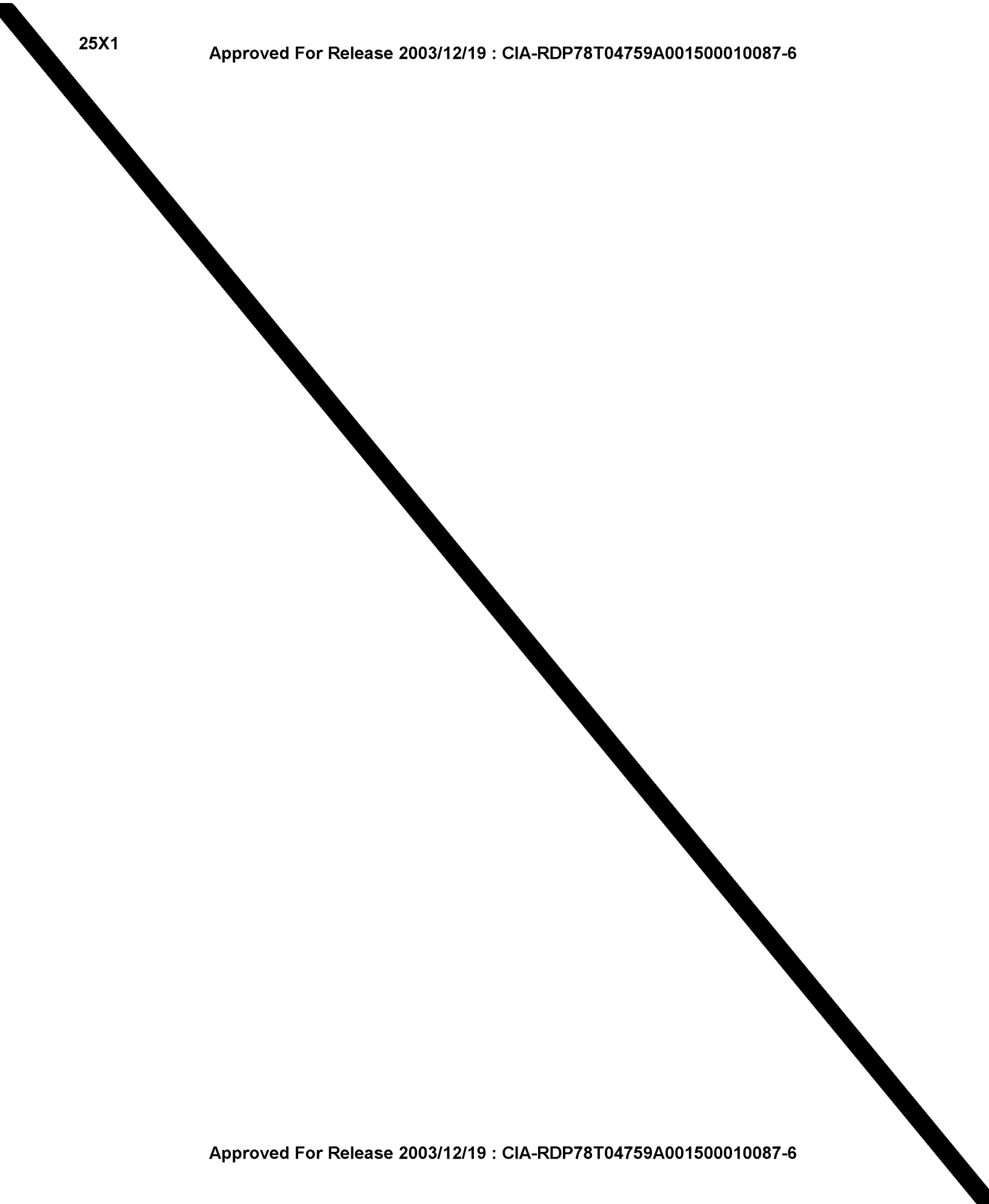

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AUGUST 1965

NATIONAL PHOTOGRAPHIC INTERPRETATION CENTER

PREFACE

This report, prepared in response to GMAIC requirement 39-5, presents a detailed photographic analysis of the Chang-hsin-tien Missile Development Center in China.

Several photographic reports and numerous documents have been previously published based upon photography of varying dates and concerning only certain portions or aspects of the Missile Development Center. This report, based upon all available photographic materials from [redacted] is intended to present a comprehensive study of the Chang-hsin-tien area and give details of recent construction and activity.

25X1D

TABLE OF CONTENTS

	Page
Summary	1
Introduction	1
Chang-hsin-tien Missile Development Center	3
Rocket Engine Test Facility	3
Main Administration Area	16
Industrial/Research and Development Area	16
Thermal Powerplant	18
Housing Areas	18
Other Major Installations	18
Rectangular Secured Area	18
Peiping Petroleum Product Storage Area, Kang Wa	19
Yung-ting Machinery Plant	19
Peiping 1st Armored School	22
Rail-served Storage Area	22
Conclusions	23
Chronology	23
References	24

LIST OF ILLUSTRATIONS

Page

Figure 1. The Chang-hsin-tien Missile Development Center and Vicinity (map and photograph) 2
Figure 2. The Rocket Engine Test Facility, Chang-hsin-tien Missile Development Center (photograph) 4
Figure 3. The Rocket Engine Test Facility and Main Administration Area, Chang-hsin-tien Missile Development Center (line drawing). 5
Figure 4. Artist's Conception of the CHTMDC Test Facility Based on Photography Showing the Horizontal Test Site in Operation with Detailed Drawings of Test Stands Derived from Photography Through (perspective and line drawings). 6
Figure 5. The Chang-hsin-tien Missile Development Center (photograph). . . 10
Figure 6. Industrial/Research and Development Area and Thermal Powerplant of the CHTMDC (line drawing) 11
Figure 7. Housing Areas of the CHTMDC, the Rectangular Secured Area, and the Petroleum Product Storage Area, Kang Wa (photograph) . . 14
Figure 8. Housing Areas of the CHTMDC, the Rectangular Secured Area, and the Petroleum Product Storage Area, Kang Wa (line drawing) . 15
Figure 9. The Yung-ting Machinery Plant and the Peiping 1st Armored School (photograph). 20
Figure 10. The Yung-ting Machinery Plant and the Peiping 1st Armored School (line drawing) 21

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SUMMARY

The Chang-hsin-tien Missile Development Center (CHTMDC) is the only known complex in China devoted to developing and testing liquid-fueled rocket engines. It consists of a rocket engine test facility, an administration area, an industrial/research and development area, a thermal powerplant, and 2 housing areas. An adjacent rectangular secured area may be functionally related to the CHTMDC, and 2 other installations in the vicinity, the Yung-ting Machinery Plant and the Peiping 1st Armored School, possibly have some association with the Chinese missile program. The nearby Peiping Petroleum Product Storage Area, Kang Wa, and a rail-served storage area could serve as support facilities.

The Rocket Engine Test Facility contains 3 test stands for vertically test firing liquid-fueled rocket engines. The largest stand may also be capable of test firing a complete rocket stage. Although no actual test firing has been observed at these stands, they are undoubtedly operational. A cloud of smoke and a cone of flame was observed at a nearby horizontal test site on photography of [ ] which probably indicates components testing for liquid-fueled rocket engines, although the possibility of the testing of a small solid-fueled motor cannot be entirely discounted. The vertical test stands have a general resemblance to Soviet test stands at the Kurumoch and Zagorsk rocket engine test facilities. The CHTMDC also contains facilities that appear capable of being used to develop and assemble prototype missile components and engines as well as an administration area and quarters for the personnel involved.

Major construction activity at the CHTMDC occurred from [ ] with most activity concentrated prior to [ ] when most of the installations were probably complete or approaching completion; however, some individual sections may have been operational in [ ] Subsequent photography of [ ] showed some scattered construction at all of the installations; however, the principal continuing construction activity is located at the northern end of the Rocket Engine Test Facility.

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INTRODUCTION

The Chang-hsin-tien Missile Development Center (CHTMDC) is located 3 nautical miles (nm) west of Chang-hsin-tien and 13 nm southwest of Peiping, China, at 39-49-30N 116-08-00E (Figure 1). The area is characterized by terraced foothills sloping down to the floodplain of the Yung-ting River. Rail service is provided by a spur from a main rail line leading from Peiping. Liang-hsiang Airfield (BE No [ ] is located 4 nm south of the CHTMDC; however, it has only a small sod landing area and is not directly accessible to the CHTMDC. Air shipments and personnel traveling by air would probably utilize one of the large airfields nearer Peiping.

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The Peiping Rocket Engine Test Facility, Chang-hsin-tien (BE No [ ] occupies the northern portion of the CHTMDC (Figure 1). The Main Administration Area for the Center is adjacent to the southern edge of the test facility. An installation designated as the Industrial/Research and Development (R & D) Area with an adjacent large Thermal Powerplant are immediately south of the test facility, on the other (southern) side of the main rail spur which bisects the CHTMDC. Two high-standard Housing Areas are immediately southeast of the Main Administration Area, one on each side of the main rail spur.

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Several installations in the general vicinity of the CHTMDC may have some part in the Chinese missile development program. An installation designated as the Rectangular Secured

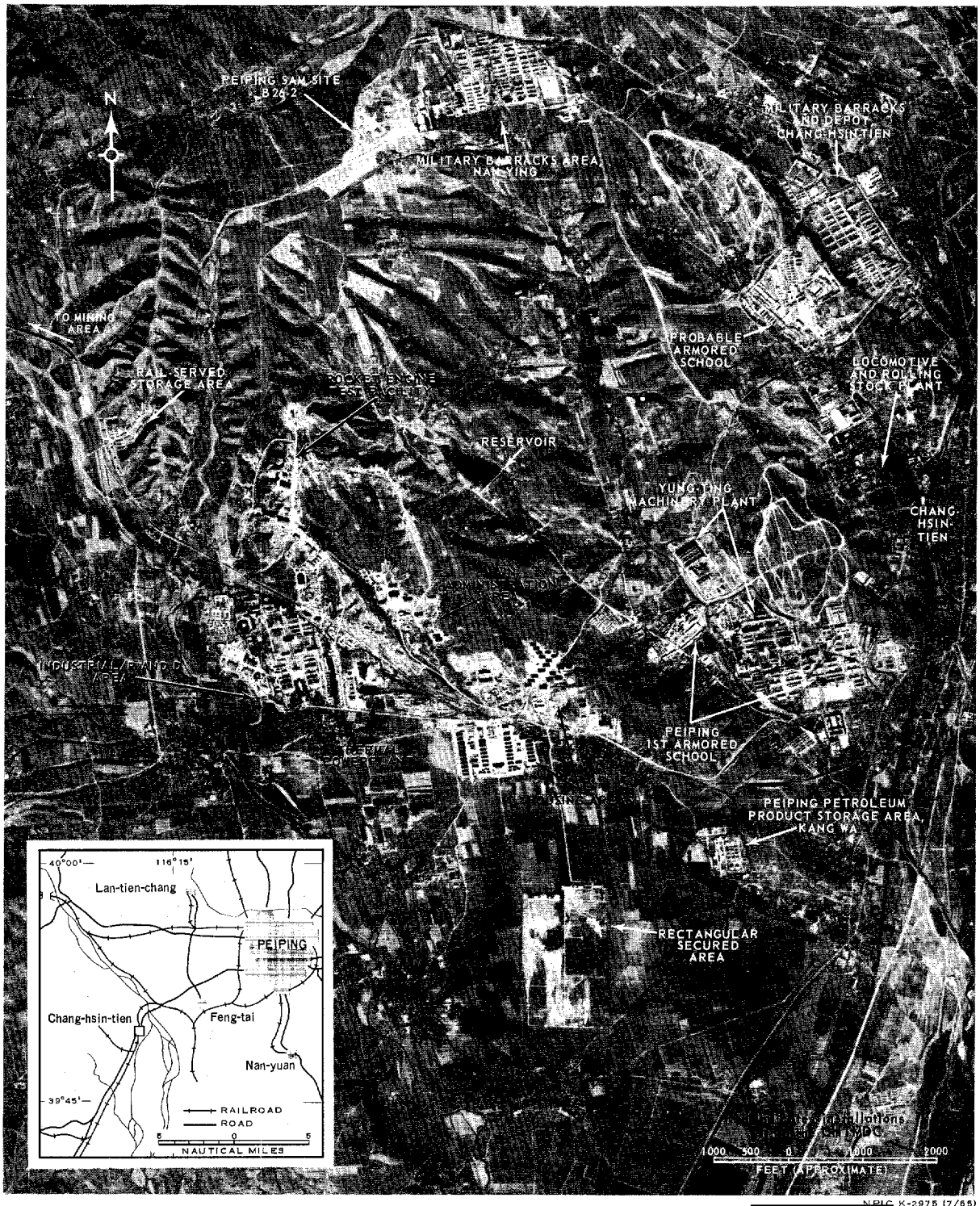

FIGURE 1. THE CHANG-HSIN-TIEN MISSILE DEVELOPMENT CENTER AND VICINITY, [redacted] 25X1D

Area which contains regularly spaced hard-surfaced areas and 5 lattice towers is located approximately 0.75 nm south of the 2 Housing Areas. The Peiping Petroleum Product Storage Area, Kang Wa (BE No [redacted] is southeast and a rail-served storage area is northwest of the CHTMDC (Figure 1); both of these installations are on the main rail spur which also serves a Mining Area and associated batch plant approximately 3 nm to the northwest. The Yung-ting Machinery Plant (618 Factory) and the Peiping 1st Armored School, Chang-hsin-tien (BE No [redacted] with nearby vehicle test tracks and artillery-type firing ranges are collocated approximately 1.75 nm to the east of the CHTMDC. Brief discussions of these installations are presented in this report because of possible relationships to the CHTMDC.

The site of the former Chang-hsin-tien Ammunition Depot (BE No [redacted] lies immediately east of the CHTMDC (Figures 1 and 5). In [redacted] this installation contained numerous ammunition storage bunkers, but in [redacted] it was largely dismantled; a reservoir now occupies a major portion of the site, and only a small secured area with a few ammunition bunkers remain.

Other installations within a 3-nm radius of the CHTMDC include the Chang-hsin-tien Locomotive and Rolling Stock Plant (BE No [redacted]; the Military Barracks and Depot, Chang-hsing-tien; the Military Barracks Area, Nan-ying; the Peiping SAM Site B26-2 (BE No [redacted]

Aerial photography has been the prime source of information concerning the presence, development, and type of facilities at the CHTMDC. Except for the period [redacted] the photographic coverage has been at fairly regular intervals, although the photography has varied greatly in quality. Photography of [redacted] was of excellent quality which permitted considerable refinement of construction details and the identification of numerous previously unidentified features. Two previous photographic interpretation reports on the CHTMDC, which also report on various other installations in the general vicinity of Chang-hsin-tien, were based largely on photography obtained from [redacted]

CHANG-HSIN-TIEN MISSILE DEVELOPMENT CENTER

Major components of the CHTMDC are the Rocket Engine Test Facility, the Main Administration Area, the Industrial/R & D Area, the Thermal Powerplant, and 2 Housing Areas. These components are described in the following sections of this report.

ROCKET ENGINE TEST FACILITY

The Peiping Rocket Engine Test Facility, Chang-hsin-tien (Figures 2 and 3), is approximately 1 square nm in area and is located on terrain having 4 north/south-trending ridges and 3 intervening valleys. A security wall, guardhouse, and guard path are along the westernmost ridge; 3 vertical test stands and support buildings are along the west-middle ridge; the east-middle ridge is unoccupied, and an access road and security wall are atop the easternmost ridge. Two northwest/southeast trending ridges connect the northern ends of the easternmost and westernmost ridges. The terrain thus provides natural security on the north, supplemented by a wall atop the northernmost ridge. All ridges are relatively low, generally rising no higher than 150 feet above the surrounding terrain; thus, the test stands are easily visible from the surrounding hills.

A horizontal test site is situated in the valley between the westernmost ridge and the vertical test stands. The test stands are aligned in a row along the western side of the next ridge.

FIGURE 2. THE ROCKET ENGINE TEST FACILITY, CHANG-HSIN-TIEN MISSILE DEVELOPMENT CENTER

The 3 vertical test stands are designated Test Stands No 1, No 2, and No 3, the numbering being from north to south. Support facilities, including assembly and checkout buildings, are situated immediately behind the stands.

A probable small components test area is located in the northeast corner of the test facility with a road leading southward to the Main Administration Area. A ditch for an underground pipeline, probably for steam, and a road are currently under construction to connect this site with the northern end of the road serving the test stands and support facilities. Administration buildings and miscellaneous storage and support structures are located on the south edge of the test facility. Descriptions and dimensions of the principal structures in the Rocket Engine Test Facility are presented in Table 1.

Table 1. Dimensions and Descriptions of Structures of the Rocket Engine Test Facility and the Main Administration Area (Item numbers are keyed to Figure 3)

Item	Description	Length (ft)	Width (ft)	Height (ft)
1	Test Stand No 1	60*	60*	150-175**
2	Test Stand No 2	65	55	150* **
3	Test Stand No 3	110*	80	180*
4	Newly constructed production-type building	130	50	25
5	Water tower, diameter 25 ft	--	--	120
6	Support building	120	45	[redacted]
7	Support building	105	45	--
8	Horizontal Test Cell building	60	55*	20*
9	Support building	120	60	45
10	Assembly/checkout building	285	140*	50
11	Forced-draft cooling tower	90	30	40
12	Control building	65	35	--
13	Support building	215*	135*	15
14	Assembly/checkout building	295	110	55*
15	Test Area administration building	190	65	50
16	Probable components test building	100	80	30
17	Probable components test building	95	50	25
18	Probable control/support building	85	40	15
19	Support building	135	85*	20
20	Main CHTMDC administration building	260	70*	70*
21	Engineering-type building	230	115*	30*
22	Possible hydrostatic test tower	30	30	75

*Greatest overall dimension.
**Estimated.

Vertical Test Stands

The 3 vertical test stands for test firing liquid-fueled rocket engines are each of a different design. Improved mensuration techniques and recent photography have permitted a more detailed analysis of these test stands. Although the lack of good photography between

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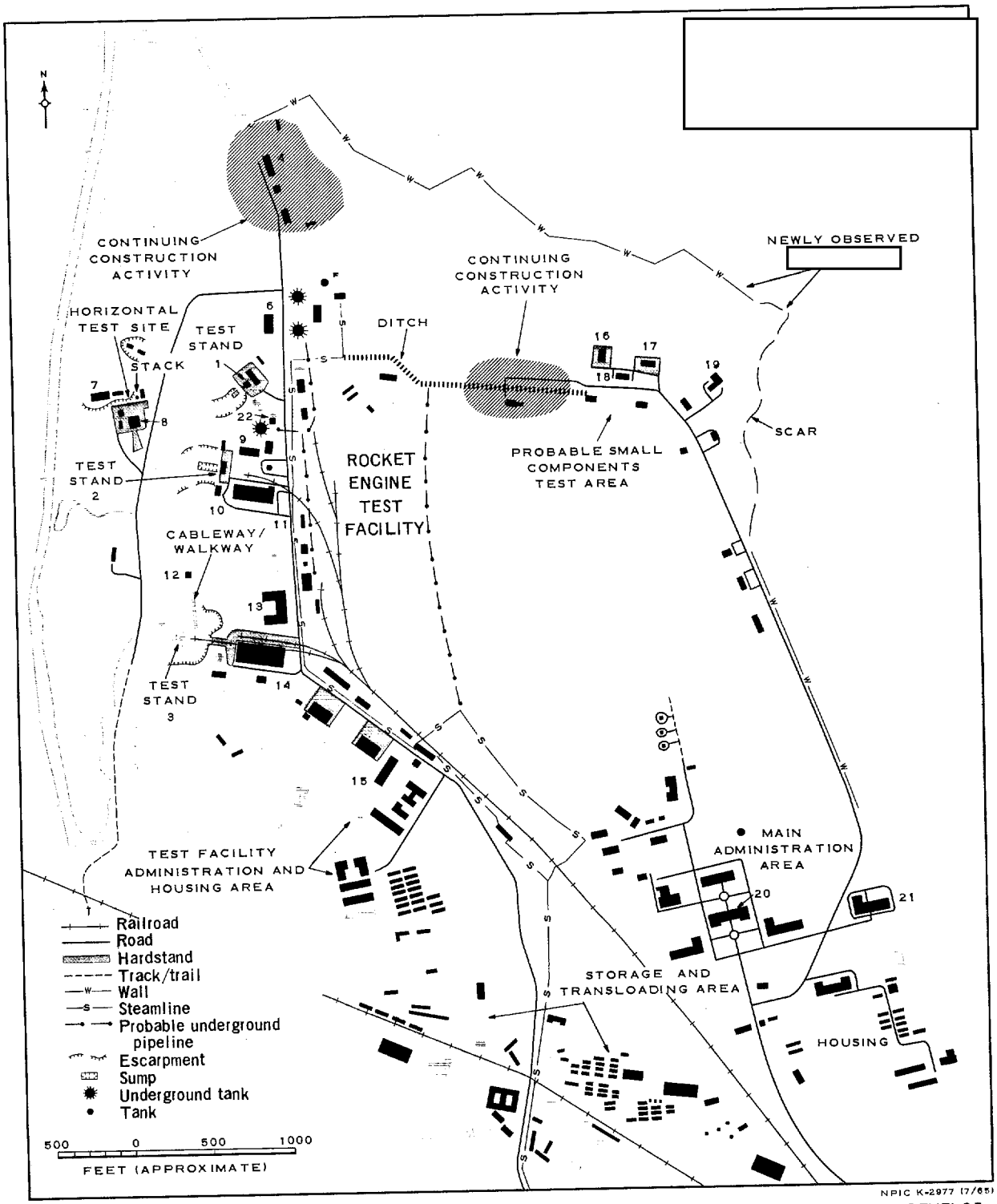
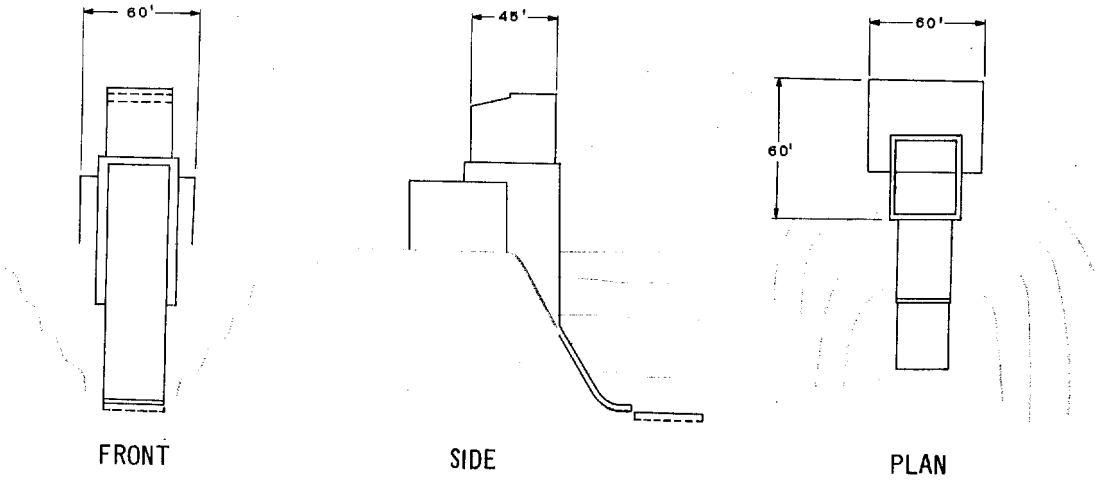
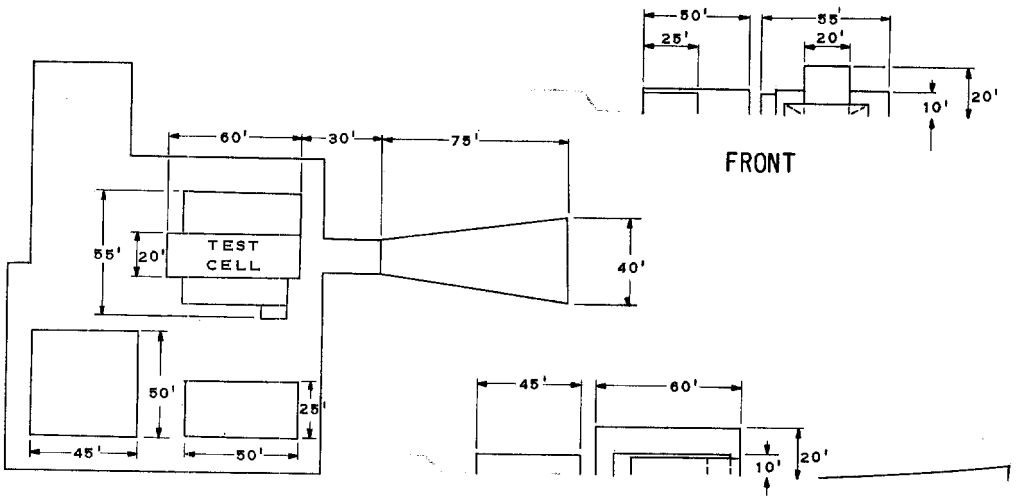


FIGURE 3. THE ROCKET ENGINE TEST FACILITY AND MAIN ADMINISTRATION AREA, CHANG-HSIN-TIEN MISSILE DEVELOPMENT CENTER. (Items numbers are keyed to Table 1.)

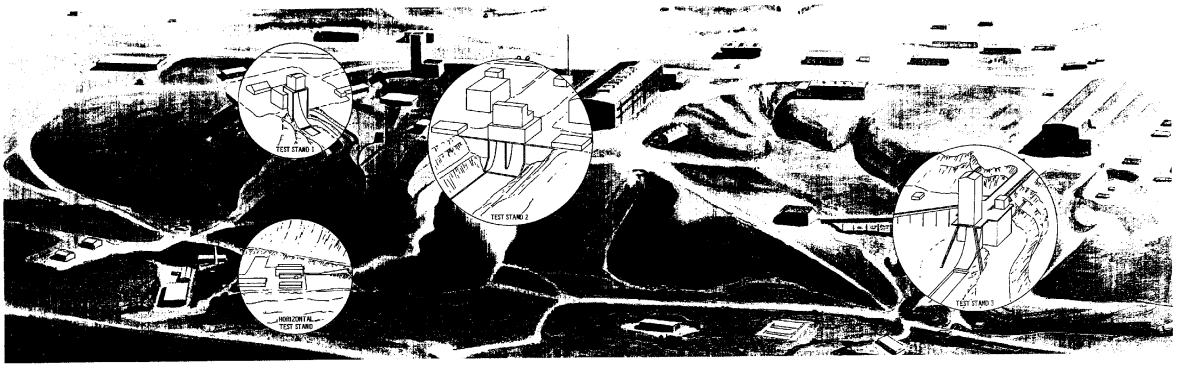


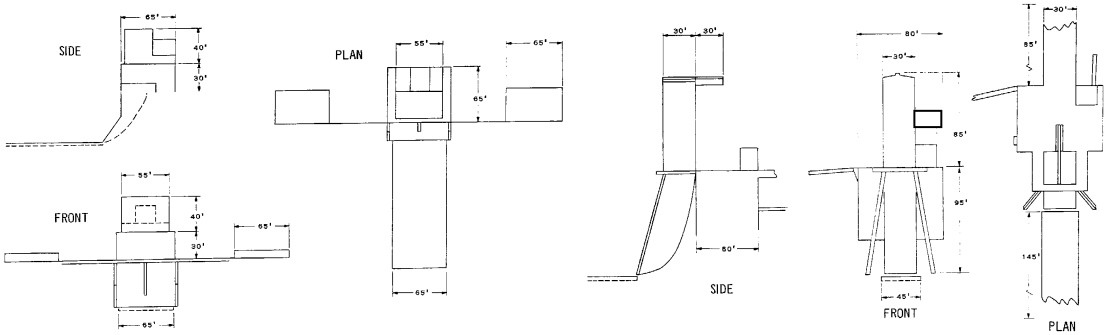
TEST STAND NO 1



HORIZONTAL TEST SITE

FIGURE 4. ARTIST'S CONCEPTION OF THE CHTMDC TEST FACILITY BASED





TEST STAND NO 2

TEST STAND NO 3

ON [redacted] PHOTOGRAPHY SHOWING THE HORIZONTAL TEST SITE IN OPERATION WITH DETAILED DRAWINGS OF TEST STANDS DERIVED FROM PHOTOGRAPHY THROUGH [redacted]

25X1D [redacted] prohibits an accurate determination, it can be reasonably stated that Test Stand No 1 was completed first and Test Stand No 2 soon after, in [redacted] Test Stand No 3, the largest of the stands, was not completed until at least a year later, in [redacted] Detailed drawings of the vertical test stands and of the horizontal test site are presented on Figure 4.

Test Stand No 1 is a small, road-served, single position stand 60 feet square overall with an estimated height of less than 175 feet but probably more than 150 feet overall including a superstructure somewhat less than 75 feet tall. It is positioned on the edge of a cut extending into a natural ravine and oriented so that the blast will be deflected southwestward. The object to be tested is suspended in the superstructure of the stand over the inclined blast deflector. The upper portion of the superstructure is less than 60 feet wide and about 45 feet from front to rear. A low support building is positioned to the rear of the stand. A small possible sump for catching runoff from a water deluge system is just in front of the stand, and an underground tank nearby probably holds the stored water for this system. An apparently semiburied control building, first observed in [redacted] is located immediately south-southeast of the stand. The size and configuration of Test Stand No 1 indicate that it is used for testing small liquid-fueled rocket engines.

Test Stand No 2 is more massive than Test Stand No 1 and is both road and rail served. It is a double position stand 55 feet wide and 65 feet long with an estimated overall height of 150 feet, including a 70-foot high superstructure. It is positioned across the end of a natural ravine which has been widened, deepened, and terraced to form a very wide blast dispersion and catch basin area oriented to direct the blast westward. A rectangular sump 145 feet long and 65 feet wide occupies the bottom of the catch basin. The 2 test positions are situated side by side with a concrete wall separating the inclined deflectors. The stand can be assumed to contain 1 and probably 2 or more operational-type propellant storage tanks for the fuel and oxidizer which are housed in the superstructure above the test positions. Control buildings are positioned on either side of the stand, and a rail-served assembly/checkout building (item 10, Figure 3) is just southeast of the stand. Four rail cars were observed beside this building on photography of [redacted] One large (item 9) and 1 small additional support buildings and a storage tank are situated northeast of the stand. A row of possible horizontal storage tanks with what appears to be an interconnecting pipeline is north of the stand near the northernmost of the 2 control buildings. Test Stand No 2 is apparently designed to be used for testing liquid-fueled rocket engines and the presence of 2 identical test bays may be an indication of limited production-type testing or consecutive first and second stage engine firing.

Test Stand No 3 is the largest and most complex of the test stands at the CHTMDC. It is constructed in a wide, short, natural ravine that has been further widened, terraced, and deepened, and it is oriented to direct the blast westward. The substructure of the stand is a 95-foot high, 80-foot square, free-standing masonry structure connected to the rim of the ravine by a ramp 30 feet wide and 85 feet long. A superstructure is extended from the substructure over an inclined blast deflector and further supported by 2 outward slanting struts. The superstructure measures 30 by 30 feet in plan view, is 85 feet tall, and has a 30-foot-long hoist crane extending rearward from its top. Overall, the stand is 80 feet wide, 110 feet long, and 180 feet high from the bottom of the blast deflector to the top of the superstructure. An

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elevated cableway/walkway extends from the rear of the stand 240 feet to just below the control building (item 12, Figure 3) located on the rim of the ravine north of the stand. A small building is positioned on the southeast corner of the handling pad directly behind the superstructure. On the rim of the ravine behind the stand is a large underground storage tank which is used to store water for the deluge cooling system. A pipeline emanates from the side of the ravine just under this tank and enters the base of the stand's substructure just behind the blast deflector. Extending westward from the base of the blast deflector is a rectangular sump 45 feet wide and 145 feet long. A small tank possibly for recovery and storage of usable effluent is situated at the northwest corner of the sump. [redacted] 25X1D photography reveals a dark tone in the sump which could be water from a recent test firing or trial run of the cascade water deluge system or perhaps contaminated residue from a previous test firing. The stand is served by a rail spur that passes through a large assembly/checkout building (item 14) and apparently continues over the ramp to the base of the stand superstructure. A second rail spur is located alongside the north side of the assembly/checkout building. The height of the superstructure, the presence of a hoist crane, the large size of the associated assembly/checkout building, and the rail service to the stand are all indications of a capability to handle and test large liquid-fueled rocket engines and/or complete rocket stages. The presence of operational-type fuel storage tanks in the stand's superstructure cannot be determined; however, the superstructure is of sufficient height to accommodate one or more large tanks.

A comparison of the vertical test stands at the CHTMDC with test stands in the USSR indicates that similarities exist in the basic concept of the test area layout and the configuration of the test stands; however, none of the Chinese stands appear identical to any known Soviet stands. The most striking similarity occurs between Test Stand No 3 and the largest test stand at the Zagorsk Rocket Engine Test Facility (BE No [redacted] 3/ Both have tall superstructures extending over inclined flame deflectors from a free-standing superstructure with 2 angled struts giving additional support to the superstructure and ramps providing 25X1A

Table 2. Dimensions and Descriptions of Structures of the Industrial/R&D Area Thermal Powerplant (Item numbers keyed to Figure 6)

Item	Description	Length (ft)	Width (ft)	Height (ft)
1	Support	190	75	35*
2	Fuel blending and control building	110	30*	--
3	Shed-type structure	270	55	30
4	Horizontal pressure storage tanks (each)	65	10	--
5	Production/shop-type building	280	185*	30*
6	Production/shop-type building	290	205*	40*
7	Production/shop-type building	290	185*	30*
8	Manufacturing/production building	255	185*	55*
9	Forced-draft cooling towers	140	40	--
10	Laboratory-type building	295	75*	65*
11	Laboratory-type building	210	45	30
12	Vehicle shed	465	85*	--
13	Monitor-roofed production building	325	180*	60*
14	Support building	315*	190*	--
15	High-bay building	135	65	45
16	Production building	280	190*	40
17	Production/processing building	250*	225*	--
18	Production/processing building	200*	45*	20
19	Laboratory-type building	210	45	30
20	Support buildings (2) with attached boilerhouses	295	55	--
21	Administration building	150*	90*	--
22	Laboratory/possible housing-type buildings (2), H-shaped	280	240*	35
23	Powerplant	230	165*	--

*Greatest overall dimension.

FIGURE 5. THE CHANG-HSIN-TIEN MISSILE DEVELOPMENT CENTER, [redacted] 25X1D

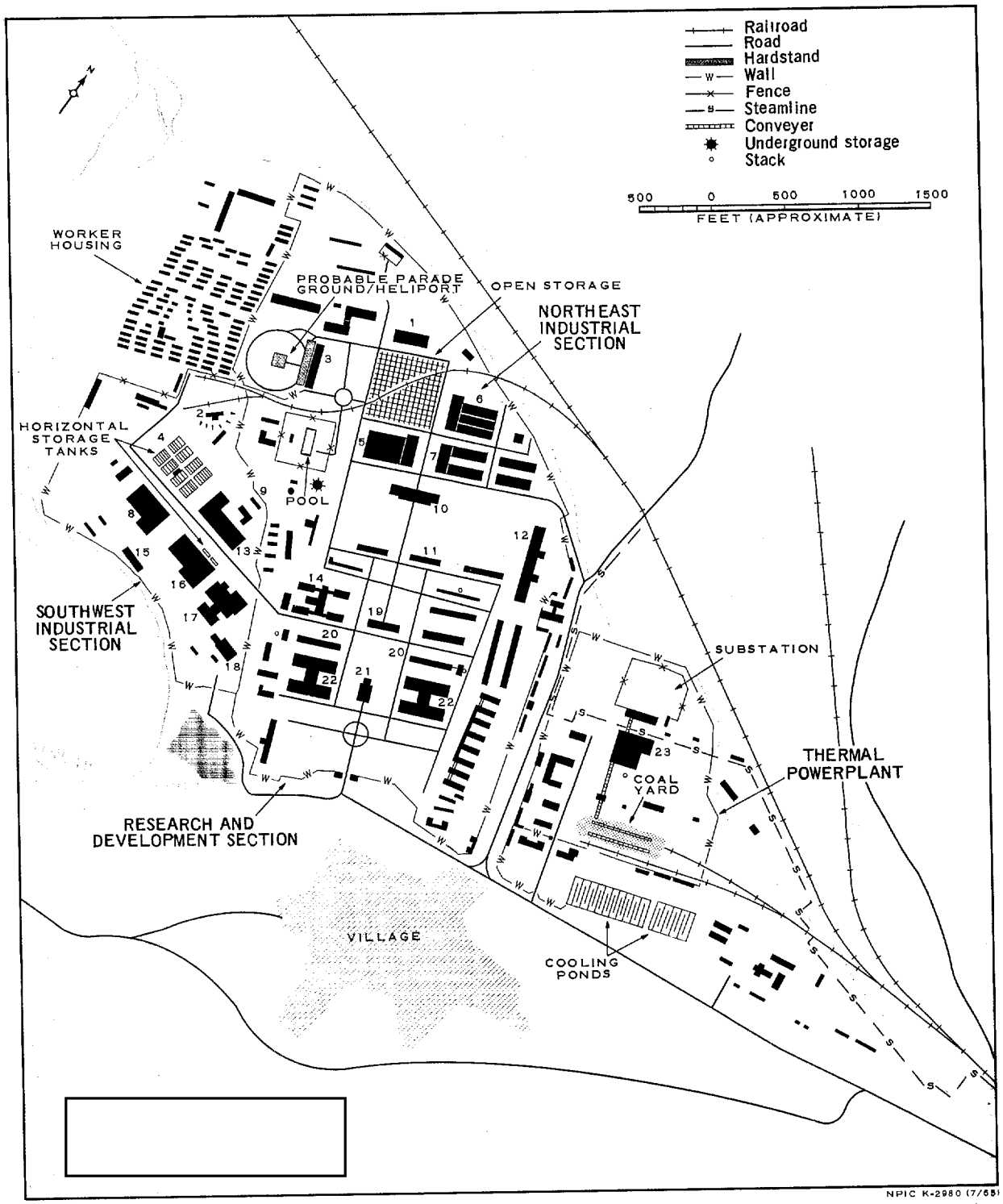

FIGURE 6. INDUSTRIAL/RESEARCH AND DEVELOPMENT AREA AND THERMAL POWER PLANT OF THE CHTMDC. (Item numbers are keyed to Table 2.)

25X1D

access to the stands from large rail-served assembly/checkout buildings; however, the Zagorsk stand is approximately 70 feet taller and somewhat more massive. Test Stand No 2 is somewhat similar to multiple position stands both at Zagorsk and at the Kurumoch Rocket Engine Test Facility (BE No 25X1A in that the stands are situated laterally against an embankment; 4/ however, the sizes and positioning of the control buildings at the Soviet stands do not compare too favorably with those of Test Stand No 2 at CHTMDC. Test Stand No 1 is similar to small, single-position stands at Zagorsk, Kurumoch, and a number of other Soviet rocket engines test facilities; however, most of the photography of the Soviet facilities is not of sufficiently good quality to permit a meaningful comparison.

Blast marks from previous test firings have been observed at several Soviet test stands. These marks consist of fan or tear-drop shaped dark deposits on the terrain or in the snow or burned-off vegetation opposite the blast deflector. However, blast marks have not been seen at a number of Soviet test stands, notably the largest stand at Zagorsk, which undoubtedly are or have been actively engaged in testing. This is probably due to the nature of the terrain, placement and configuration of the stands, and type of propellant used. These may also be the reasons why blast marks, as described above, have not as yet been seen at the CHTMDC. However, it is felt that the absence of blast marks would not preclude the probability that test firings have occurred at all 3 CHTMDC test stands.

Horizontal Test Site

The Horizontal Test Site at the CHTMDC consists of a hardened test area containing a test building (item 8, Figure 3) and 2 support buildings, a small heating plant, 1 large (item 7) and 1 small additional support buildings on a nearby bluff, and 2 probable storage buildings cut into the hillside approximately 300 feet north of the hardened test area (Figure 4). The test building measures 60 by 55 feet and has a middle longitudinal section 20 feet high extending over the single test cell. A small hardened pad 30 feet long is immediately in front of the test cell, and a slightly inclined, wedge-shaped blast deflector 75 feet long extends in front of the test pad. The object to be tested is probably held in a horizontal position by a framework or a sled and could possibly be fired either inside the cell or outside on the pad. The major buildings were present on photography of [redacted] and 25X1D the site appeared to be complete or nearing completion in [redacted] 25X1D

The test observed at the site on photography of [redacted] was a cone of flame and a 25X1D cloud of smoke emanating from an object apparently being fired inside the test cell in a horizontal position (Figure 4). 5/ The location of the horizontal test site in close proximity to vertical, liquid-fuel test stands and the known need to test various components of propulsion systems indicate that the site is probably for components testing for liquid-fueled rocket engines. However, the possibility that the site is used to test fire small solid-fueled rocket motors cannot be entirely discounted.

Probable Small Components Test Area

The Probable Small Components Test Area is situated in the northeast corner of the test facility on a ridge overlooking a ravine (Figure 3). The main buildings were present in [redacted] 25X1D [redacted] 25X1D although considerable earth scarring in the area indicated that construction had recently been completed or was still occurring.

This test area consists of two probable components test buildings (items 16 and 17, Figure 3) situated on hardened pads, a probable

control/support building (item 18) located between and slightly south of the probable test buildings, an L-shaped support building (item 19), a drive-through support building, and several smaller structures. Placements of the probable test buildings are similar in that each have what appear to be 2 test cells oriented so that the component being tested will exhaust over the ravine; however, the 2 buildings differ in size and configuration. The possible test cells of the westernmost building (item 16), which measures 100 by 80 feet, are on the side with the shortest dimension while the possible test cells of the other building (item 17), which measures 95 by 50 feet, are on the side with the longest dimension. The probable control/support building is situated so as to provide support to both test buildings and may house control and/or data analysis equipment. The large support buildings are probably used as assembly or temporary storage buildings.

Test Facility Administration and Housing Area

An administration and housing area directly associated with the test facility is located in the south central portion of the facility beside the main road and the rail spur serving the vertical test stands (Figure 3). The principal administration building (item 15) is situated just inside the security wall on a small rise. A probable vehicle shed and security buildings are nearby. Other structures in the area are an H-shaped probable messhall, a vehicle shed, 3 high-standard multistory housing buildings, and a small group of worker housing buildings.

Other Test Facility Support Buildings and Structures

Other support buildings and structures within the test facility of the CHTMDC provide the various on-site miscellaneous support functions necessary for a complex test and development operation. A water tower (item 5, Figure 3) and 2 nearby underground storage tanks are situated near Test Stand No 1 on some of the highest terrain in the test facility. Probable underground pipelines connect these tanks to a third underground tank midway between Test Stand No 1 and Test Stand No 2 and continue southward toward Test Stand No 3. A possible hydrostatic test tower (item 22) approximately 30 feet square and 75 feet tall is adjacent to the third underground tank. This tower was first observed in early [redacted] and was constructed so as to be contiguous with a previously constructed small support building approximately 30 feet wide and 50 feet long. A forced-draft cooling tower (item 11) and 3 storage-type buildings are located between Test Stands No 2 and No 3, near the rail spur. A U-shaped support building (item 13) has recently been constructed immediately north of the large assembly/checkout building for Test Stand No 3. It was first observed under construction in [redacted] and was completed by [redacted] Two transloading/storage buildings are located on the rail spur east-southeast of the large assembly/checkout building (item 14), and immediately southwest of these 2 buildings is an engineering or shop-type building. Steamlines originating at the Thermal Powerplant have been identified entering the area, and they are positioned so as to serve most of the test facility.

25X1D
25X1D
25X1D

Areas of Continuing Construction

Continuing construction activity is apparent in 2 areas of the northern part of the test facility (Figures 3 and 5). The northernmost activity is located at the end of the main road serving the vertical test stands and consists of 5 newly constructed buildings; 4 of these, including a production-type building (item 4), are interconnected by underground pipelines. The other area of continuing construction activity is

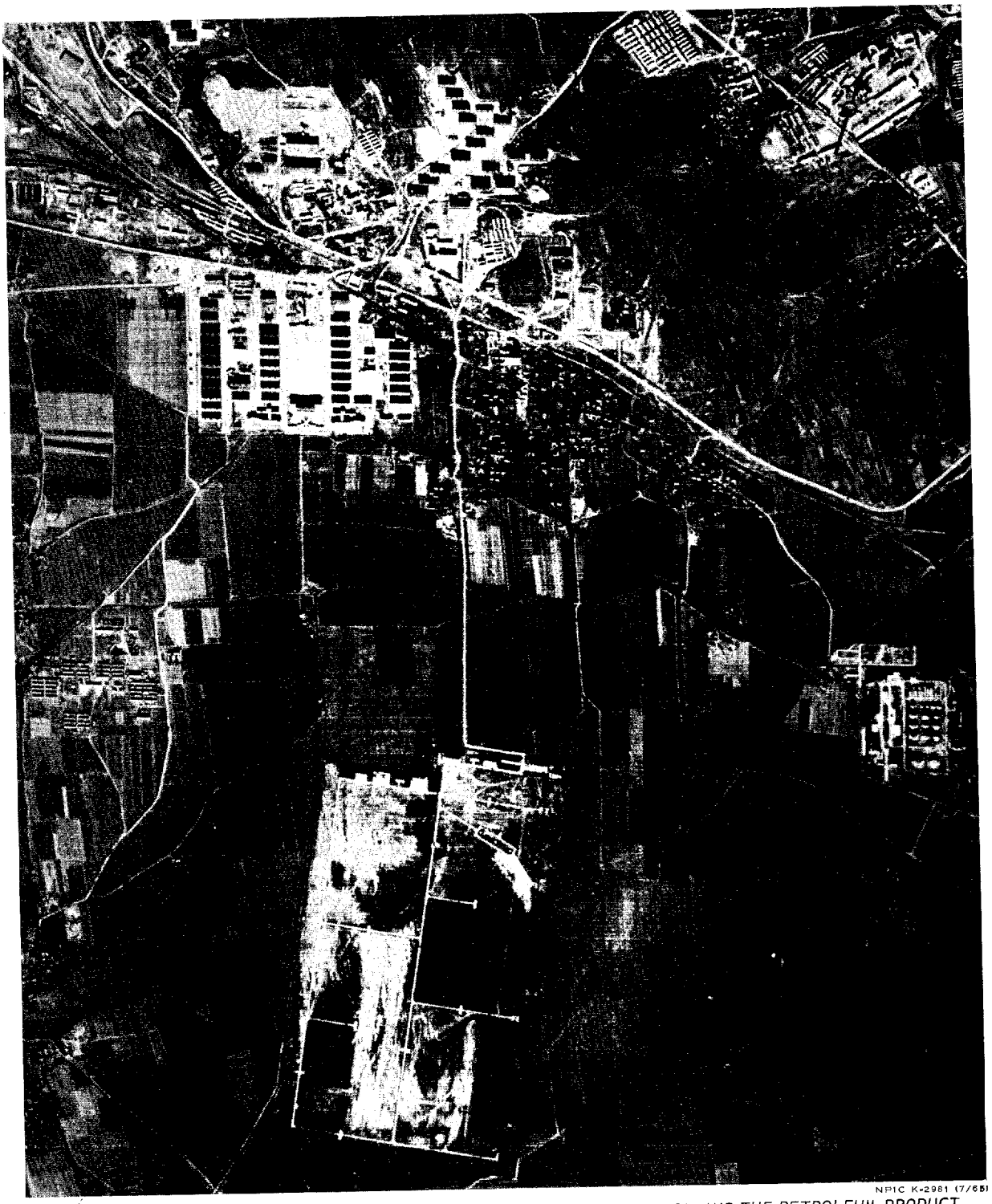

FIGURE 7. HOUSING AREAS OF THE CHTMDC, THE RECTANGULAR SECURED AREA, AND THE PETROLEUM PRODUCT STORAGE AREA, KANG WA,

25X1D

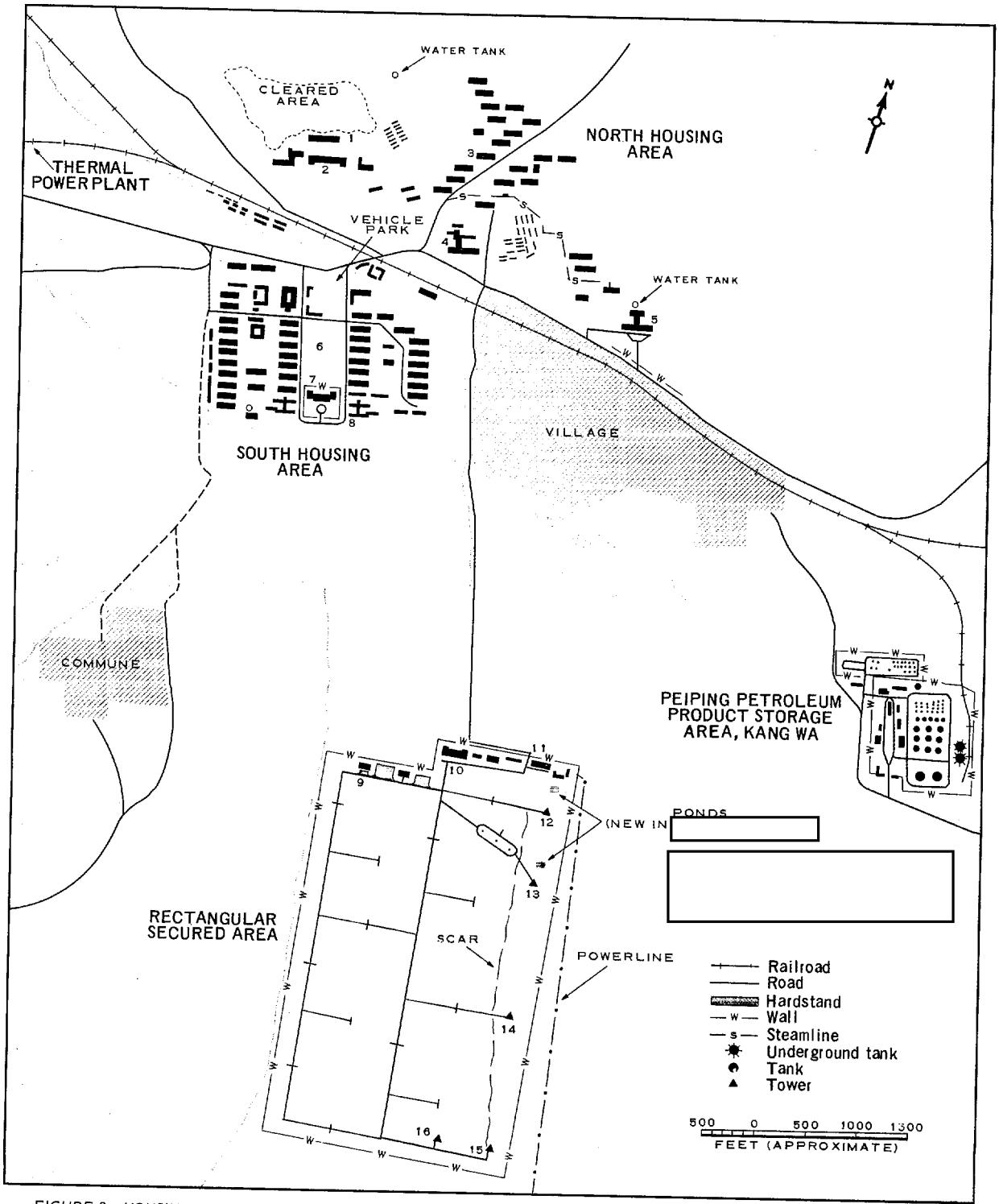

FIGURE 8. HOUSING AREAS OF THE CHTMDC, THE RECTANGULAR SECURED AREA, AND THE PETROLEUM PRODUCT STORAGE AREA, KANG WA. (Item numbers are keyed to Table 3.)

25X1D
25X1D

immediately west of the Probable Small Components Test Area; this area contains a new ditch, probably for an underground steam pipeline, which extends west from the Probable Small Components Test Area toward Test Stand No 1, and a small building has been constructed beside this ditch. Construction also continues on the security wall which will probably surround the site entirely when completed.

Table 3. Dimensions and Descriptions of Structures of the Housing Areas and the Rectangular Secured Area (Item numbers are keyed to Figure 8)

Item	Description	Length (ft)	Width (ft)	Height (ft)
1	Administration/housing building	290	50	60*
2	Administration/housing building	330	95*	--
3	High-standard housing buildings (20)	175	30	55
4	Probable dining hall	255*	210*	--
5	T-shaped building	305*	195*	65*
6	High-standard housing buildings (35)	175	30	55
7	Administration building	285*	70*	--
8	Probable dining hall	285*	130*	--
9	Support buildings (2)	95	30	20
10	Curved-roof building	205	80*	40
11	Administration/laboratory	170	40	30
12	Lattice tower	--	--	260
13	Lattice tower	--	--	150
14	Lattice tower	--	--	150
15	Lattice tower	--	--	75
16	Lattice tower	--	--	75

*Greatest overall dimension.

Storage and Transloading Area

A storage and transloading area which probably serves all or a large part of the CHTMDC is located immediately south of the test facility along 2 main rail spurs (Figure 3). Open storage sites, warehouses, and temporary buildings are dispersed throughout the area together with some larger buildings which probably produce construction or maintenance-type materials.

MAIN ADMINISTRATION AREA

The Main Administration Area for the CHTMDC was constructed concurrently with the test facility and is located adjacent to its southeast edge (Figures 3 and 5). Further extension of the easternmost security wall will probably enclose a portion or all of this area with the test facility. The Main Administration Area contains a large, multistory principal administration building (item 20, Figure 3) flanked by two smaller L-shaped administration buildings. It is possible that some laboratory and/or engineering functions are also performed nearby. The buildings immediately northwest of the principal administration building may serve in this capacity, and a large L-shaped building (item 21) just to the east resembles an engineering-type building. Both high-standard and worker-type housing is provided in a small section immediately southeast of the Main Administration Area (Figure 3). Dimensions of the principal buildings in this area are presented in Table 1 which is keyed to Figure 3.

INDUSTRIAL/RESEARCH AND DEVELOPMENT AREA

The Industrial/R & D Area of the CHTMDC contains a centrally located R & D Section, an Industrial Section in the northeast corner of the area, a separately secured Industrial Section in the southwest corner of the area, and a section of worker housing in the northwest corner (Figures 5 and 6). The entire area, excepting the worker housing, is secured by a wall. A surfaced road leads directly to the Rocket Engine Test Facility, and a short spur from the main CHTMDC rail spur enters the Southwest Industrial Section. The CHTMDC Thermal Powerplant is adjacent to the east side of the Industrial/R & D Area. Table 2 contains descriptions and dimensions of the principal

structures of the Industrial/R & D Area and of the Thermal Powerplant.

Research and Development Section

The R & D Section is the oldest component of the CHTMDC. It appeared to be completed, or in the last stages of construction, when first seen on photography of [redacted] 25X1D The section contains a variety of types of structures probably designed to provide for the initial accommodations of equipment and personnel concerned with the required research on and development of rocket engine test programs and the related missiles and missile components. Soviet aid at the CHTMDC is apparent in the previously mentioned similarity of the CHTMDC test stands to Soviet test stands, and an R & D-type program to adapt Soviet techniques to Chinese technology would probably have been necessary. The early presence of an elaborate swimming pool and probable parade ground/heliport within the R & D Section are perhaps indicative of the initial presence of Soviet technicians. It is of interest to note that the pool was filled when observed on photography of [redacted] 25X1D but is has since been empty. Also, objects resembling vehicles were observed on the probable parade ground/heliport on photography of [redacted] 25X1D [redacted] 25X1D but no activity has been subsequently observed at this location.

The southern part of the R & D Section contains an administration building (item 21, Figure 6) flanked by 2 H-shaped laboratory or possible housing buildings (items 22) and 2 support buildings having attached boilerhouses (items 20). Several laboratory-type buildings (items 10, 11, and 19) are located in the center of the section adjacent to the Northeast Industrial Section. A water tower, an underground storage tank, the fenced swimming pool, the circular probable parade ground/heliport with an adjacent shed-type structure (item 3), and several other support buildings are in the northwest corner of the section. Other support buildings include a vehicle shed (item 12), an H-shaped support building (item 14), and other small structures and storage buildings.

Northeast Industrial Section

The Northeast Industrial Section is adjacent to and contiguous with the R & D Section and may serve as the site for fabricating and assembling scale and/or prototype models of rocket engines and/or their components. It contains production/shop-type industrial buildings (items 5, 6, and 7) with roof monitors, an open storage area, a small building with a fenced compound, and 4 support buildings, 1 of which (item 1) has been recently constructed.

Southwest Industrial Section

The Southwest Industrial Section is separately secured from the other sections of the Industrial/R & D Area and appears to be involved in the production of liquid petroleum products. A rail spur serves a fuel blending and control building (item 2, Figure 6) which has adjacent tank car unloading facilities and a semicircular arrangement of underground fuel storage tanks. A bank of forced-draft cooling towers (item 9) is near a monitor-roofed production building (item 13) and groups of cylindrical horizontal pressure storage tanks (item 4). One production building (item 16) has 4 interconnected horizontal pressure storage tanks along its northern side. A manufacturing/production-type building (item 8) has circular roof ventilators and a central section with a large opening on one end facing a separate high-bay building (item 15). A new production/processing building (item 17) of unusual and irregular configuration consists of adjacent sections of different levels. A smaller new

production/processing building (item 18) is nearby. The Southwest Industrial Section may also be concerned with research on and/or production of liquid rocket propellants.

THERMAL POWERPLANT

The Thermal Powerplant provides electric power and steam for the CHTMDC (Figures 5 and 6). A rail-served coal yard and recently expanded cooling ponds are just south of the large powerplant and generator hall (item 23, Figure 6), and a large substation is adjacent to the north side of the generator hall. Numerous small support and/or temporary storage buildings are scattered throughout the plant area. Steamlines can be traced from the plant to the Rocket Engine Test Facility and to the North Housing Area.

HOUSING AREAS

The principal housing accommodations for personnel of the CHTMDC are located in the eastern part of the center on the north and south sides of the main rail spur serving the area (Figures 7 and 8). Neither of these 2 areas is secured. Most of the buildings are multistory, rectangular structures of high-standard, modern construction, and most of the buildings of each section are of the same size and design. Some are flat roofed with 3 stairwell skylights visible on the top, and others are gable or hipped roofed. Descriptions and dimensions of the principal buildings are presented in Table 3 which is keyed to Figure 8.

North Housing Area

The housing area north of the rail spur contains 20 high-standard housing buildings (item 3), a probable dining hall (item 4), a T-shaped building (item 5) having some resemblance to a modern hospital, 2 water towers, and a section in the western part of the area containing newly constructed buildings (items 1 and 2) which appear to be administration-type buildings but which may be visitor quarters. A cleared area immediately north of these 2 buildings (Figure 8) is a probable indication of future expansion. A steamline can be seen entering the area from the Thermal Powerplant but cannot be traced to individual buildings except in the vicinity of the T-shaped building. An area of construction materials and temporary construction sheds is located in the center of the area near the railroad.

South Housing Area

The housing area south of the rail spur contains 35 high-standard housing buildings (item 6), a secured administration building (item 7), 2 probable dining halls (item 8), a vehicle park, a water tower, and several support and storage buildings. The configuration and size of the area show that this is the most important of the housing facilities at the CHTMDC, and it probably provides accommodations for a large number of the highly trained technicians employed at the center.

OTHER MAJOR INSTALLATIONS

Several installations in the general vicinity of the CHTMDC which may have functions related to missile development are discussed briefly in the following sections of this report.

RECTANGULAR SECURED AREA

The Rectangular Secured Area of undetermined function is situated less than 1 nm south-southeast of the South Housing Area (Figures 7 and 8). It measures approximately 4,100 by 2,315 feet and covers an area of approximately 0.25 square nm. This installation appears to have no direct relationship to the South Housing Area, and it is considered to have a possible

relationship to the CHTMDC only because of its proximity and concurrent date of construction, and also because its function has not yet been identified.

The Rectangular Secured Area contains 5 lattice towers, a generally symmetrical road network, evenly spaced, small, rectangular, surfaced areas, and a number of buildings concentrated in the northern end. A powerline enters the area from the vicinity of a powerplant in a small town to the south. The 5 lattice towers are situated along the east edge of the area. Of these, the northernmost tower (item 12, Figure 8) is the tallest, being 260 feet high. The 2 central towers (items 13 and 14) are identical to each other and are 150 feet high. The 2 southernmost towers (items 15 and 16) are also identical to each other but are different from the others, being only 75 feet high and of heavier construction. Small circular ponds have recently been identified near the 2 northernmost towers.

Various functions normally associated with lattice towers such as drilling, transmitting, electronic countermeasures, microwave, and meteorological rocket launch have been considered, but none of these functions can be definitely assigned to the towers of this installation. The presence of the 2 small ponds and what may be a small hole directly beneath the towers are indicative of drilling, but none of the machinery normally associated with drill rigs has been observed at the site.

The small, evenly spaced, rectangular, surfaced areas observed at this installation are situated along a generally rectangular road pattern superimposed over linear excavations. Photography of [redacted] shows excavations containing paired circular objects at the locations of the surfaced areas. If these circular objects are small buried storage tanks interconnected by pipelines under the road network, the function of the area would presumably be the storage of liquids; however, this interpretation can in no way be confirmed by other facilities within the secured area or by similarity to any other known liquid storage area. Photography of [redacted] reveals a vehicle parked on one of the small rectangular areas.

25X1D

25X1D

The buildings at the northern end of the area consist of a large curved-roof building suitable for either a manufacturing/fabrication-type process or for storing large objects, an administration/laboratory-type building (item 11), 2 small support buildings (item 9) near 2 hard-surfaced pads measuring 160 by 140 feet, and 4 other support buildings.

A previous detailed report on this installation was based on photography obtained through [redacted] 6/ The only significant changes observed since [redacted] are the appearance of the 2 small ponds, a long ground scar traversing the area from north to south, and the relocation of the entrance road from near item 10 to near item 11 (Figure 8).

25X1D
25X1D

PEIPING PETROLEUM PRODUCT STORAGE AREA, KANG WA

This facility, which was constructed concurrently with the Research and Development Section of the CHTMDC, appeared operational in [redacted] and could serve as a support facility for the center (Figures 7 and 8). It is located about 4,000 feet southeast of the South Housing Area, is road and rail served, and is secured by a wall. The facility contains 2 large, 9 medium, and numerous small POL storage tanks, 2 underground storage tanks, 1 spherical tank, a small heat and power plant, and a separate small newly secured area of very small horizontal and vertical storage tanks. Several support buildings are also within the facility.

25X1D

YUNG-TING MACHINERY PLANT

The Yung-ting Machinery Plant is located

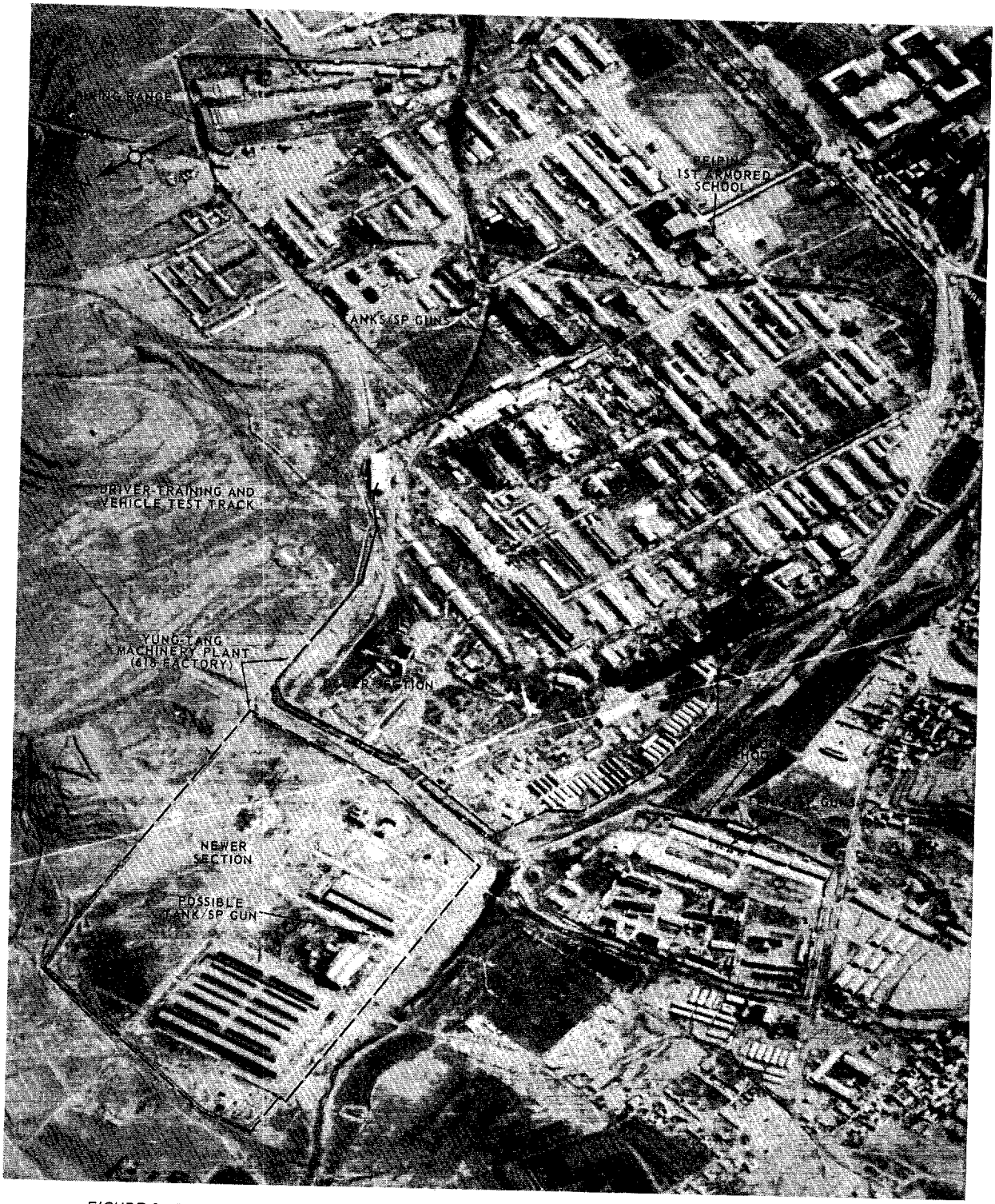

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FIGURE 9. THE YUNG-TING MACHINERY PLANT AND THE PEIPING 1ST ARMORED SCHOOL, [redacted] 25X1D

25X1

25X1

25X1

25X1D

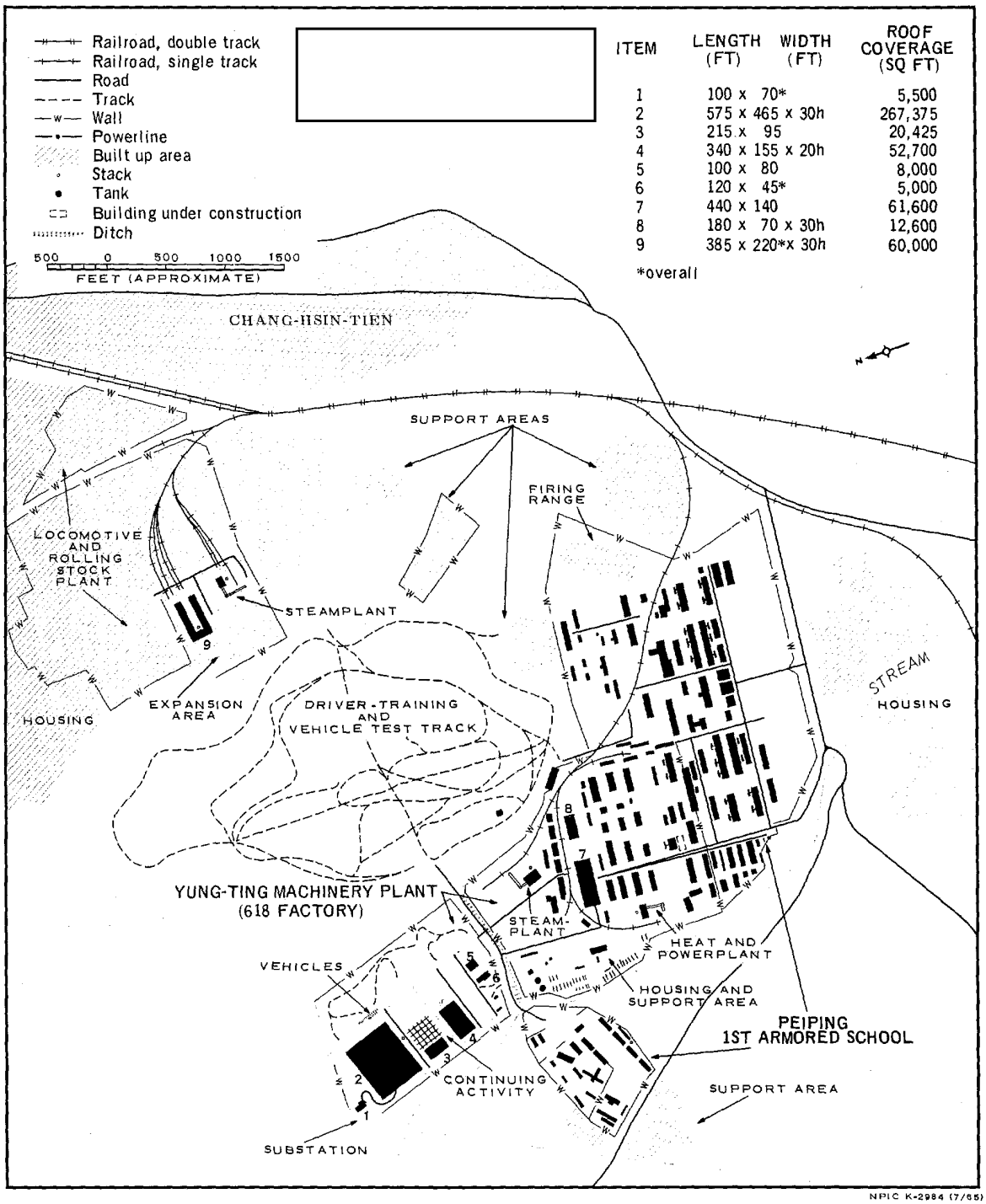

FIGURE 10. THE YUNG-TING MACHINERY PLANT AND THE PEIPING 1ST ARMORED SCHOOL.

25X1

about 1.75 nm east of the CHTMDC (Figure 1). This plant, which had the code designation 618 Factory, is a secured, rail-served facility which probably produces and/or repairs tracked armored vehicles and farm tractors; however, its proximity to the CHTMDC and the presence of a new section at the plant containing a large fabrication/assembly-type building, the construction of which was concurrent with that of the CHTMDC, also suggest an association with the Chinese missile program.

The older section of the Yung-ting Machinery Plant has shown almost no change since first observed in [redacted] (Figures 9 and 10). 25X1D
It contains production and/or repair facilities in 6 monitor-roofed shop buildings in the northern end of the section, 2 of which (items 7 and 8, Figure 10) are rail served. Two steamplants, support and storage buildings, and a housing and support area occupy the remainder of the older section. The newer section is separately secured and contains a large multibay, monitor-roofed fabrication/assembly building (item 2), a support building (item 3), and a shop building (item 4) that were visible on photography of [redacted] However, 25X1D
construction continued until [redacted] when 25X1D
the section was probably fully operational with a probable transformer house (item 1) and substation, 2 small support buildings (items 5 and 6), several other small structures, and a road network which provided all necessary production facilities. A powerline leads from the substation and can be traced for a short distance in the direction of the CHTMDC Thermal Powerplant. A possible tank/self-propelled gun was observed in the newer section on photography 25X1D
of [redacted] and rows of vehicles have been observed in the area on subsequent photography. A driver-training and vehicle test track is immediately west of the plant.

The Yung-ting Machinery Plant could probably produce missile associated equipment such as transporters and prime movers or perhaps some of the larger elements of a missile system. A recently published detailed photographic interpretation report on this plant was based on photography obtained through [redacted] 7/ 25X1D

PEIPING 1ST ARMORED SCHOOL

The Peiping 1st Armored School is collocated with the Yung-ting Machinery Plant and contains administration, classroom, and support buildings, barracks, vehicle sheds, and an artillery firing range (Figures 9 and 10). This is the closest military installation to the CHTMDC, and there is a direct road connection between the 2 installations. It may provide additional military support to the center, and it is also probably involved in testing vehicles from the Yung-ting Machinery Plant and in the training of troops. The nearby Chang-hsin-tien Locomotive and Rolling Stock Plant (BE No [redacted] 25X1A
[redacted] has a small area that was under expan- 25X1A
sion during the period [redacted] 25X1D
[redacted] (Figure 10); however, this plant appears to 25X1D
be concerned only with railroad equipment manufacturing and repair.

RAIL-SERVED STORAGE AREA

A rail-served storage area is situated along the main rail spur, 1.5 nm northwest of the CHTMDC (Figure 1). The area contains 8 large storage buildings, 5 large storage-transshipment buildings, a small heat plant, 6 barracks, and several small support structures. No security is apparent. A mining area and associated batch plant are at the terminus of the rail spur approximately 1.5 nm northwest of the storage area. These installations probably provide support to the CHTMDC in the form of construction materials and storage of these materials and miscellaneous articles.

CONCLUSIONS

The CHTMDC is a relatively elaborate facility for developing, assembling, and testing liquid-fueled rocket engines. It probably also has the capability to produce prototype rocket engines and to assemble and test complete rocket stages. The center is complete and operational although some continued construction is evident.

CHRONOLOGY

25X1D In [redacted] the site of the future CHTMDC was occupied by several small villages and cultivated fields. The only nearby facilities were the Chang-hsin-tien Ammunition Depot, 3 army barracks areas, and the Chang-hsin-tien Locomotive and Rolling Stock Plant.

25X1D [redacted] photography revealed an apparently completed Research and Development Area and ground scarring at the future sites of the Rocket Test Facility, the Thermal Powerplant, and the South Housing Area. The Chang-hsin-tien Ammunition Depot had been largely dismantled. The older section of the Yung-ting Machinery Plant and the Peiping 1st Armored School occupied 1 of the 3 old army barracks areas; the Military Barracks Area, Nan-ying, and the Military Barracks and Depot, Chang-hsin-tien, occupied the other 2 areas. Early construction was seen at the newer section of the Yung-ting Machinery Plant. The Peiping Petroleum Product Storage Area, Kang Wa, and the Mining Area appeared operational with a new rail spur leading from the main line past the Petroleum Storage and R & D Areas to the Mining Area.

25X1D Photography of [redacted] showed that considerable construction had taken place in slightly more than 2 years time. The Rocket Test Facility was approximately 60 percent complete with the 2 smaller test stands sufficiently progressed to be recognizable on poor-quality photography. The major buildings were present at the horizontal test site. An Industrial Area was under construction at the R & D Area, the Thermal Powerplant may have been operational; the Administration and South Housing Areas were 90 percent complete, and construction was approximately 20 percent complete on the North Housing Area. Preliminary construction activity was apparent at the site of the Rectangular Secured Area. The 3 main buildings of the newer section of the Yung-ting Machinery Plant appeared complete, and the nearby vehicle test tracks showed considerable activity.

25X1C [redacted] photography of early [redacted] 25X1D revealed indications of steady construction at the Rocket Test Facility with the 2 smaller test stands and the horizontal test site complete or nearing completion and the third and largest test stand approximately 30 percent complete. The larger production buildings at the industrial section of the Industrial/R & D Area were complete and probably operational, and the Thermal Powerplant was in operation. The Rectangular Secured Area was 60 percent complete, and the rail-served Storage Area was complete and operational. Scattered construction had occurred at the other installations. [redacted] 25X1 photography of late [redacted] 25X1D showed the early stages of construction of the large assembly/checkout building for the largest test stand.

25X1D [redacted] photography showed that almost all of the major structures had been erected at the CHTMDC except for the largest test stand which was approximately 60 percent complete.

25X1D [redacted] photography of [redacted] was 25X1 of relatively poor quality; however, the largest test stand may have been complete by that time. The first evidence of security around the Test Facility and minor construction at the other installations were also observed.

revealed the largest test stand to be complete or nearing completion and also showed a test in progress at the horizontal test site. The security wall had been completed on the west side, and earth scarring was apparent at the north end of the Test Facility. Minor construction and the razing of temporary buildings gave a generally more finished appearance to the site. The Rectangular Secured Area was completed and has shown very little change to

Photography of was of excellent quality and showed many details hitherto unobserved. All test stands were complete, and a dark tone in the sump of the largest test stand resembled water or contaminants left from either a trial run of the water deluge system or a test firing. Minor construction was continuing at the other installations.

photography of through shows few additional significant structures except at the north end of the Test Facility where continuing construction is evident.

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